On 5 November 2015, at about 3.45 p.m., the Fundão Tailings Dam, in Mariana, Minas Gerais, Brazil, belonging to Samarco Mineração S.A., failed, resulting in the release of about 45 million m$^3$ of waste (about 90 million tons) which gave rise to a 10-m high wave, and resulted in an environmental disaster and the death of 14 workers and five residents (three adults and two children) in the Bento Rodrigues subdistrict, at about 5 km downriver. The Bento Rodrigues and Paracatu de Baixo subdistricts were practically erased from the map. The impact extended to Barra Longa county, and entirely aggraded the Candonga Hydroelectric Dam, more than 100 km away from Mariana. Of the 14 dead workers, 13 were outsourced and one a company employee. As a result of the destruction of the Doce River basin up to the state of Espírito Santo, more than 10,000 jobs were lost, and thousands of farmers and fishermen lost their jobs and source of income\(^1\).

The sludge spread across the Côrrego do Fundão Valley, and travelled more than 600 km along the Doce River and its tributaries, until reaching its mouth in Linhares county, Espírito Santo. About 1,600 hectares of vegetation were affected. The sludge, which increased the turbidity of the Doce River basin rivers, killed thousands of fish and other animals.

About 200 buildings in the Bento Rodrigues subdistrict were buried; this was the most affected community, more than 600 families lost their homes. The water supply to the residents of towns fed by the local rivers, such as Governador Valadares, with about 276,000 inhabitants, had to be discontinued for several days. The losses with infrastructure damage alone in Mariana, was of about BRL 100 million, according to the city government\(^1\).

Here we might apply the concept of major work accident, as it originated in mining work. In addition to causing the death of employees, it went beyond the company boundaries to cause the death of inhabitants of surrounding towns, in addition to incalculable material damage, resulting in spatial and temporal extension of its consequences to human life, the physical and mental health of victims and the environment\(^2\).

In addition to the immediate impacts, such as discontinuation of fresh water supply to the population on the margins of the Gualaxo and Doce rivers, the incidence of diarrhea and dengue increased in the area.

Analysis of suspended sediments across the Doce River basin evidenced high levels of mercury, arsenic, nickel and lead. The iron, arsenic, mercury and manganese levels exceed the limits described in water quality guidelines\(^3\).

Unemployment increased by about 30% in Mariana historical city. Also the consumption of alcohol and illegal drugs, and the rates of depression, domestic violence and suicide increased. The sludge also seriously affected Barra Longa, resulting in a considerable amount of dust, which increased the rates of respiratory problems and skin diseases, mainly among children and the elderly. These phenomena increased the risk of long-term adverse effects, with consequent need to monitor the state of health of the affected population.

REFERENCES

